

REMARKS

This Amendment is submitted in reply to the Office Action dated March 13, 2003. Applicants respectfully request reconsideration and further examination of the patent application under 37 C.F.R. § 1.111.

Upon entry of the foregoing Amendment, Claims 1, 5-10, 14-20 and 37-42 are pending in the application. The amendments are believed to introduce no new matter, and their entry is respectfully requested. Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections.

Response to Restriction Requirement

In response to the Restriction Requirement, Applicants elect with traverse to prosecute Claims 1-20 and 37-42 (Invention I).

Summary of the Examiner's Rejections

Claims 10-20 and 37-42 were rejected under 35 U.S.C. 112 (second paragraph) as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention.

Claims 1, 3-7, 9-10, 12-18 and 20 were rejected under 35 U.S.C. 102(b) as being anticipated by Hol (WO 00/00678).

Claims 1, 3-10, 12-20, 37, 39-42 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hol in view of Cassin (US 5,910, 287) and/or Knebel (US 6,503,456) and/or Turner (US 6,340,589) and/or Santarsiero (US 6,296,673).

Claims 2, 11 and 38 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hol and/or Cassin in view of Zuk (US 6,379,625) and/or McPherson (US 5,096,676).

Summary of Amendment

Applicants have cancelled Claims 2-4, 11-13, 21-36 and 43-54 (without prejudice) and amended Claims 1, 5-6, 10, 14, 16, 37 and 41-42 to more particularly define the present invention.

Remarks regarding §112 (second paragraph) rejection

Independent Claims 10 and 37 were rejected under 35 U.S.C. 112 (second paragraph) as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Applicants respectfully traverse this §112 (second paragraph) rejection in which the Examiner stated it is unclear how to compare the concentrations of the reagent solutions because it is unclear

as to what is really being compared since the mixture of protein solution and reagent solution constitutes a reagent solution in totality. Applicants submit that the claimed terminology is clear in that the concentration of the reagent solution in the second well has a higher concentration than the reagent solution in the first well and that the protein solution and reagent solution in the first well do not constitute a reagent solution in totality. Please see the highlighted portions of Claim 10 below which clearly indicates that the combination of the protein solution and reagent solution in the first well are distinct solutions and do not constitute a reagent solution in totality:

10. (Once Amended) A protein crystallography plate, comprising:
a frame including a plurality of wells formed therein, each well including:
a first well including a relatively small reservoir having a substantially concaved bottom for receiving a protein solution and a reagent solution; and
a second well including a relatively large reservoir for receiving a reagent solution that has a higher concentration than the reagent solution within said first well, wherein the protein solution and the reagent solution within said first well interact with the reagent solution within said second well via a vapor diffusion process which enables the formation of protein crystals within said first well, wherein said first well and said second well are adjacent to one another.

As such, Applicants respectfully request removal of the §112 (second paragraph) rejections.

Remarks regarding § 102(b) and § 103(a) rejections

Applicants respectfully submit that independent Claims 1, 10 and 37 which have been amended to include the limitations of Claims 2 and 38 or 12 (now cancelled) are patentable over Hol, Cassin, Knebel, Turner, Santarsiero, Zuk and/or McPherson. The claimed invention as recited in amended independent Claim 1 (for example) is directed to a microplate comprising a frame including a plurality of wells formed therein where each well includes a first well having a relatively small reservoir with a substantially concaved bottom and a second well having a relatively large reservoir positioned near the relatively small concaved reservoir of said first well, wherein said first well and said second well overlap one another (emphasis added to show distinguishing limitations). Pending independent Claim 37 contains the same distinguishing limitations which are recited in pending Claim 1. And, pending independent Claim 10 contains the same distinguishing limitations recited in Claim 1 except the first well and second well do not overlap one another instead the first well and the second well are adjacent to one another (see cancelled Claim 12).

The teachings of Hol, Cassin, Knebel, Turner, Santarsiero, Zuk and/or McPherson differ significantly from the present invention as claimed in several respects. First, the pending independent Claims 1, 10 and 37 each recite a limitation where a well includes a first well that has a relatively small reservoir with a concaved

bottom and a second well that has a relatively large reservoir. The Examiner cited FIGS. 1-2 and page 19, lines 1-8 in Hol to teach a first well that has a relatively small reservoir with a concaved bottom. However, the disclosure and FIGS. 1-2 in Hol clearly indicates that the small wells in that application do not have concaved bottoms but instead have flat bottoms. In particular, FIGS. 1-2 illustrate small wells 32 that have internal circles (not labeled) which means that the small wells 32 have flat bottoms and not a concaved bottom. Because, if the small wells 32 had concaved bottoms there would be no internal circle shown in FIGS. 1-2. To further support this conclusion, Hol refers on page 3, lines 14-15 to US Patent Application Serial Number 09/150,629 which discloses in more detail the preferred crystallization plate. This US Patent Application has issued as US Patent No. 6,039,804 (see IDS dated January 3, 2002) and in this patent it is clearly shown in FIGURE 3 and stated in col. 4, line 34 that the small wells 32 have flat bottoms 40. Accordingly, Hol does not teach or suggest small wells that have concaved bottoms as claimed in the present invention.

Secondly, the pending independent Claims 1 and 37 recite a limitation where a well has a first well and a second well that overlap one another. The Examiner cited Zuk and/or McPherson to teach a well which has a first well and a second well that overlap one another. However, McPherson does not disclose this limitation instead McPherson discloses in FIGS. 1-2 where a large well 30 surrounds a small well 20 and as such it is not possible for the small well 20 to overlap the large well 30 because the entire small well 20 is located within the large well 30. Likewise, Zuk does not disclose this limitation instead Zuk discloses in FIGS. 21-23 and col. 15, line 34 through col. 16, line 38 a figure eight shaped well 317 that receives a cup 301 such that the figure eight shaped well 317 forms two distinct wells that do not overlap one another as recited in pending Claims 1 and 37. And in the event, the figure eight shaped well 317 in Zuk does not have the cup 310 inserted therein then there is disclosed just one well and not a first well and a second well that overlap one another as recited in pending Claims 1 and 37. Moreover, pending independent Claim 10 contains the limitation of a first well having a concaved bottom and second well where the first well and second well are adjacent to one another which is not disclosed or suggested by the cited references. Accordingly, the Applicants respectfully submit that the aforementioned substantial differences between Hol, Cassin, Knebel, Turner, Santarsiero, Zuk and/or McPherson and the amended independent Claims 1, 10 and 37 are indicative of the patentability of the present invention.

To further support the patentability of the present invention, reference is made to the enclosed Rule 1.132 affidavit from Dr. Ma Sha the New Products Manager of the Life Sciences Division at Corning Inc. Dr. Sha is also a co-inventor of the present patent application. Dr. Sha's affidavit outlines the details about the substantial commercial success of Corning® 96 Well Protein Crystallization Plate which has the same elements recited in pending Claims 1 and 37. In addition, Dr. Sha's affidavit also describes where a competing company--C.A. Greiner & Sohne Gesellschaft m.b.H.--has been making and selling microplates that have the

same elements recited in pending Claim 10 after a representatives from Greiner was shown a prototype of the Corning® 96 Well Protein Crystallization Plate back in the summer of 2001.

Conclusion

From the foregoing, Applicants respectfully submit that all of the stated grounds of rejections have been properly traversed, accommodated, or rendered moot. Accordingly, Applicants respectfully request reconsideration of all outstanding rejections and allowance of pending Claims 1, 5-10, 14-20 and 37-42.

If the Examiner believes, for any reasons, that personal communication will expedite prosecution of this application the Examiner is invited to telephone the undersigned at the number provided.

It is believed no fees are due with this Amendment and Affidavit. If this is incorrect, the Commissioner is authorized to charge any fees which may be required for this paper to Deposit Account No. 50-1481.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Claims 2-4, 11-13, 21-36 and 43-54 have been cancelled without prejudice.

Claims 1, 5-6, 10, 14, 16, 37 and 41-42 have been amended as follows:

--1. (Once Amended) A microplate, comprising:
a frame including a plurality of wells formed therein, each well including:
a first well having a relatively small [concaved] reservoir with a substantially concaved bottom; and
a second well having a relatively large reservoir positioned near the relatively small concaved reservoir of said first well, wherein said first well and said second well overlap one another.

5. (Once Amended) The microplate of Claim 1, wherein said frame has a footprint sized to be [capable of being] handled by a robotic handling system.

6. (Once Amended) The microplate of Claim 1, wherein each well is positioned on said frame such that [so as to enable] a liquid handling system can [to] automatically deposit a sample solution into said first well and can [to] automatically deposit a reagent solution into said second well.

10. (Once Amended) A protein crystallography plate, comprising:
a frame including a plurality of wells formed therein, each well including:
a first well including a relatively small reservoir having a substantially concaved bottom for [form capable of] receiving a protein solution and a reagent solution; and
a second well including a relatively large reservoir for [capable of] receiving a reagent solution that has a higher concentration than the reagent solution within said first well, wherein the protein solution and the reagent solution within said first well interact with the reagent solution within said second well via a vapor diffusion process which enables the formation of protein crystals within said first well, wherein said first well and said second well are adjacent to one another.

14. (Once Amended) The protein crystallography plate of Claim 10, wherein said frame has a footprint sized to be [capable of being] handled by a robotic handling system.

16. (Twice Amended) The protein crystallography plate of Claim 10, wherein each well is positioned on said frame so that [as to enable] a liquid handling system can [to] automatically deposit the protein solution and the reagent solution into said first well and can [to] automatically deposit the reagent solution into said second well.

37. (Once Amended) A protein crystallography plate, comprising:
a frame made from cyclo-olefin that includes a plurality of wells formed therein, each well is also made from cyclo-olefin and includes:

a first well including a relatively small reservoir having a substantially concaved bottom for [capable of] receiving a protein solution and a reagent solution; and

a second well including a relatively large reservoir for [capable of] receiving a reagent solution that has a higher concentration than the reagent solution within said first well, wherein the protein solution and the reagent solution within said first well interact with the reagent solution within said second well via a vapor diffusion process which enables the formation of protein crystals within said first well, wherein said first well and said second well overlap one another.

41. (Once Amended) The protein crystallography plate of Claim 37, wherein said frame has a footprint sized to be [capable of being] handled by a robotic handling system.

42. (Once Amended) The protein crystallography plate of Claim 37, wherein each well is positioned on said frame such that [so as to enable] a liquid handling system can [to] automatically deposit the protein solution and the reagent solution into said first well and can [to] automatically deposit the reagent solution into said second well. --

PENDING CLAIMS

- 1. (Once Amended) A microplate, comprising:
a frame including a plurality of wells formed therein, each well including:
a first well having a relatively small reservoir with a substantially concaved bottom; and
a second well having a relatively large reservoir positioned near the relatively small concaved reservoir of said first well, wherein said first well and said second well overlap one another.
5. (Once Amended) The microplate of Claim 1, wherein said frame has a footprint sized to be handled by a robotic handling system.
6. (Once Amended) The microplate of Claim 1, wherein each well is positioned on said frame such that a liquid handling system can automatically deposit a sample solution into said first well and can automatically deposit a reagent solution into said second well.
7. The microplate of Claim 1, further comprising a seal that is positioned over said plurality of wells.
8. The microplate of Claim 1, wherein said microplate is manufactured from cyclo-olefin.
9. The microplate of Claim 1, wherein said frame and said plurality of wells form a multi well high-throughput protein crystallography plate.
10. (Once Amended) A protein crystallography plate, comprising:
a frame including a plurality of wells formed therein, each well including:
a first well including a relatively small reservoir having a substantially concaved bottom for receiving a protein solution and a reagent solution; and
a second well including a relatively large reservoir for receiving a reagent solution that has a higher concentration than the reagent solution within said first well, wherein the protein solution and the reagent solution within said first well interact with the reagent solution within said second well via a vapor diffusion process which enables the formation of protein crystals within said first well, wherein said first well and said second well are adjacent to one another.

14. (Once Amended) The protein crystallography plate of Claim 10, wherein said frame has a footprint sized to be handled by a robotic handling system.

15. The protein crystallography plate of Claim 14, wherein said robotic handling system is a Society of Biomolecular Screening compatible robotic handling system.

16. (Twice Amended) The protein crystallography plate of Claim 10, wherein each well is positioned on said frame so that a liquid handling system can automatically deposit the protein solution and the reagent solution into said first well and can automatically deposit the reagent solution into said second well.

17. The protein crystallography plate of Claim 16, wherein said liquid handling system is a Society of Biomolecular Screening compatible liquid handling system.

18. The protein crystallography plate of Claim 10, further comprising a seal that is positioned over said plurality of wells.

19. The protein crystallography plate of Claim 10, wherein said frame and said plurality of wells are manufactured from cyclo-olefin.

20. The protein crystallography plate of Claim 10, wherein said protein crystallography plate is a 96 well high-throughput protein crystallography plate.

37. (Once Amended) A protein crystallography plate, comprising:
a frame made from cyclo-olefin that includes a plurality of wells formed therein, each well is also made from cyclo-olefin and includes:

a first well including a relatively small reservoir having a substantially concaved bottom for receiving a protein solution and a reagent solution; and

a second well including a relatively large reservoir for receiving a reagent solution that has a higher concentration than the reagent solution within said first well, wherein the protein solution and the reagent solution within said first well interact with the reagent solution within said second well via a vapor diffusion process which enables the formation of protein crystals within said first well, wherein said first well and said second well overlap one another.

38. The protein crystallography plate of Claim 37, wherein said first well and said second well overlap one another.

39. The protein crystallography plate of Claim 37, wherein said first well and said second well are adjacent to one another.

40. The protein crystallography plate of Claim 37, wherein said first well and said second well are connected to one another by a channel.

41. (Once Amended) The protein crystallography plate of Claim 37, wherein said frame has a footprint sized to be handled by a robotic handling system.

42. (Once Amended) The protein crystallography plate of Claim 37, wherein each well is positioned on said frame such that a liquid handling system can automatically deposit the protein solution and the reagent solution into said first well and can automatically deposit the reagent solution into said second well. --